We Claim:

- 34 -

The use of a *Klebsiella pneumonia* membrane fraction combined with an antigen or hapten for the preparation of a pharmaceutical composition intended to orient the immune response toward a Th1 type and/or mixed Th1/Th2 type response directed against the antigen or hapten, in which response the Th1 response is close to or greater than the Th2 type response.

- 35 -

The use of Claim 34, wherein the membrane fraction comprises at least membrane fractions of two different bacterial strains.

- 36 -

The use of Claim 34, wherein the membrane fraction is prepared by a method comprising the following steps:

a) culture of the bacteria in a culture medium allowing their growth followed by centrifugation of the culture;

b) where appropriate, deactivation of the lytic enzymes of the bacterial pellet obtained in step a), followed by centrifugation of the suspension obtained;

c) extraction and removal of nonmembrane proteins and of nucleic acids from the pellet obtained in step a) or b) by at least one cycle of washing the pellet in an extraction solution;

d) digestion of the membrane pellet obtained in step c) in the presence of protease enzymes, followed by centrifugation;

e) at least one cycle of washing of the pellet obtained in step d) in physiological saline and/or in distilled water; and

f) ultrasonication of the pellet obtained in step e).

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The use of Claim 34, wherein the membrane fraction is prepared by a method comprising the following steps:

a) culture of the bacteria in a culture medium allowing their growth, followed, where appropriate, by centrifugation;

b) freezing of the culture medium or of the pellet obtained in step a) followed by thawing and drying of the cells;

c) removal, by means of a DNase, of the nucleic acids from the dry cells obtained in step b) which have been resuspended;

d) grinding of the cells obtained in step c) and clarification of the suspension obtained;

e) precipitation, in an acid medium, of the suspension obtained in step d) and removal of the pellet;

f) neutralization of the supernatant obtained in step e) containing the membrane suspension, followed by dialysis and concentration of the membrane suspension; and

g) sterilization of the concentrated membrane suspension obtained in step f).

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The use of Claim 34, wherein the antigen or hapten is chosen from the antigens or haptens specific to an infectious agent or from the antigens associated with tumor cells.

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The use of Claim 38, wherein the antigen or hapten is chosen from peptides, lipopeptides, polysaccharides, oligosaccharides, nucleic acids, lipids or any compound capable of specifically directing the Th1 type and/or mixed Th1/Th2

type immune response against an antigen or hapten specific to an infectious agent or an antigen associated with a tumor cell.

- 40 -

The use of Claim 34, wherein the antigen or hapten is coupled or mixed with the membrane fraction.

- 41 -

The use of Claim 34, wherein the antigen or hapten is covalently coupled with a supporting peptide to form a complex capable of specifically binding to mammalian serum albumin.

- 42 -

The use of Claim 41, wherein the supporting peptide is a peptide fragment derived from streptococcal G protein.

- 43 -

The use of Claim 41, wherein the complex is prepared by genetic recombination.

- 44 -

The use of Claim 41, wherein the antigen, hapten or complex is covalently coupled with at least one of the compounds contained in the membrane fraction.

- 45 -

The use of Claim 44, wherein the covalent coupling is a coupling carried out by chemical synthesis.

- 46 -

The use of Claim 45, wherein one or more linking elements are introduced into at least one of the compounds contained in the membrane fraction and/or in the antigen, hapten or complex to facilitate the chemical coupling.

- 47 -

The use of Claim 46, wherein the linking element introduced is an amino acid.

- 48 -

The use of Claim 44, wherein the coupling between the antigen, hapten or complex and at least one of the compounds contained in the membrane fraction, is carried out by genetic recombination when the antigen, hapten or complex and the membrane compound are of a peptide nature.

- 49 -

The use of Claim 34, wherein the pharmaceutical composition comprises an agent which makes it possible to carry the membrane fraction associated with the antigen, hapten or complex in a form which makes it possible to enhance its stability and/or its immunogenecity.

- 50 -

The use of Claim 49, wherein the agent is an oil-in-water or water-in-oil type emulsion.

- 51 -

The use of Claim 49, wherein the agent is a particle of the liposome, microsphere or nanosphere type or any type of structure allowing the

encapsulation and the presentation in particulate form of the membrane fraction associated with the antigen, hapten or complex.

- 52 -

The use of Claim 49, wherein the agent is chosen from aluminum salts, calcium salts, compounds of plant origin such as Quil A or saponin, or compounds of bacterial origin such as cholera, pertussis or tetanus toxoid or thermolabile E. coli toxin.

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The use of Claim 34, wherein the pharmaceutical composition comprises an agent which makes it possible to regulate the immune response induced by the membrane fraction associated with the antigen, hapten or complex.

- 54 -

The use of Claim 53, wherein the regulatory agent is chosen from cytokines, growth factors, hormones or cellular components such as nucleic acids, a protein of the family of heat shock proteins or ribosomes.

- 55 -

The use of Claim 34 for the preparation of a pharmaceutical composition intended for the prevention or treatment of infectious diseases or cancers.

- 56 -

The use of Claim 55, wherein the infectious disease is of viral, bacterial, fungal or parasitic origin.

- 57 -

The use of Claim 56 for the preparation of a pharmaceutical composition intended for the prevention or treatment of paramyxovirus infections.

- 58 -

The use of Claim 57, wherein the paramyxovirus is a respiratory syncytial virus.

- 59 -

The use of Claim 58, wherein the antigen associated with the membrane fraction comprises the peptide G2Na of SEQ ID No. 4 or one of its homologs whose sequence exhibits a degree of identity of at least 80% with SEQ ID No. 4.

- 60 -

The use of Claim 59, wherein the peptide G2Na or one of its homologs is covalently coupled with a C-terminal fragment (BB) of the streptococcal G protein to form a complex capable of binding to mammalian serum albumin.

- 61 -

The use of Claim 57, wherein the paramyxovirus is a parainfluenzae virus.

- 62 -

A pharmaceutical composition comprising a membrane fraction prepared by the method of Claim 36 and an antigen or hapten associated with the membrane fraction.

- 63 -

A pharmaceutical composition comprising a membrane fraction prepared by the method of Claim 37 and an antigen or hapten associated with the membrane fraction.

- 64 -

The pharmaceutical composition of Claim 62, wherein the antigen is chosen from paramyxovirus peptide fragments.

- 65 -

The pharmaceutical composition of Claim 63, wherein the antigen is chosen from paramyxovirus peptide fragments.

- 66 -

The pharmaceutical composition of Claim 64, wherein the paramyxovirus is a respiratory syncytial virus or a parainfluenzae virus.

- 67 -

The pharmaceutical composition of Claim 65, wherein the paramyxovirus is a respiratory syncytial virus or a parainfluenzae virus.

- 68 -

The pharmaceutical composition of Claim 66, wherein the antigen associated with the membrane fraction comprises the peptide G2Na of SEQ ID No. 4 of the respiratory syncytial virus or a peptide whose sequence exhibits a degree of identity of at least 80% with SEQ ID No. 4.

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The pharmaceutical composition of Claim 67, wherein the antigen associated with the membrane fraction comprises the peptide G2Na of SEQ ID No. 4 of the respiratory syncytial virus or a peptide whose sequence exhibits a degree of identity of at least 80% with SEQ ID No. 4.

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The pharmaceutical composition of Claim 68, wherein the peptide G2Na, or one of it homologs, is covalently coupled with a C-terminal fragment (BB) of the streptococcal G protein to form a complex capable of binding to mammalian serum albumin.

- 71 -

The pharmaceutical composition of Claim 69, wherein the peptide G2Na, or one of it homologs, is covalently coupled with a C-terminal fragment (BB) of the streptococcal G protein to form a complex capable of binding to mammalian serum albumin.